

## Message Text

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PAGE 01 STATE 133783

ORIGIN ERDA-07

INFO OCT-01 EUR-12 ISO-00 DODE-00 OES-07 SSO-00 FEA-01

USIE-00 INRE-00 NSCE-00 AID-05 CEA-01 CIAE-00

COME-00 EPG-02 EB-07 FPC-01 H-01 INR-07 INT-05

L-03 NSAE-00 NSC-05 OMB-01 PM-04 SP-02 SS-15

STR-04 TRSE-00 ACDA-07 /098 R

DRAFTED BY ERDA/OPA: RPORTER:AJ

APPROVED BY EUR/SOV: MJWILKINSON

EU,/SOV: SHUMPHREY

ERDA/MHD: WJACKSON

DASD: COL. BARR

OES/APT/SEP: DCRAMER (INFO)

EUR/P: FSEIDNER

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FM SECSTATE WASHDC

TO AMEMBASSY MOSCOW IMMEDIATE

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E.O. 11652: N/A

TAGS: TGEN, ENRG, SOPN, UR, US

SUBJECT: PRESS RELEASE RE AIRLIFT OF MHD MAGNET TO SOVIET  
UNION PURSUANT TO US-USSR ENERGY AGREEMENT (08.0208)

1. FOLLOWING PRESS INFORMATION IS BEING RELEASED SIMULTAN-  
EOUSLY BY ERDA, ARGONNE NATIONAL LABORATORY, AND THE DEPART-  
MENT OF DEFENSE, ON MONDAY, JUNE 13. PLEASE INFORM AND  
PASS COPIES TO SHEYNDLIN AND SHELKOV ASAP.

2. BEGIN TEXT. THE WORLD'S LARGEST AIRCRAFT WILL AIRLIFT  
A US-BUILT, 40-TON MAGNET TO THE SOVIET UNION SUNDAY,  
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PAGE 02 STATE 133783

JUNE 19 AS PART OF A JOINT PROGRAM TO DEVELOP A MORE  
EFFICIENT WAY TO GENERATE ELECTRICITY.

THE MAGNET WILL BE ABOARD A US AIR FORCE C-5 GALAXY,  
SCHEDULED TO TAKE OFF FROM CHICAGO'S O'HARE FIELD. THE  
AIRCRAFT WILL BE THE FIRST C-5 TO LAND IN THE SOVIET UNION  
WHEN IT TOUCHES DOWN MONDAY, JUNE 20 AT MOSCOW'S SHEREM-

TYEVO AIRPORT AFTER A 12-HOUR NON-STOP FLIGHT.

THE US MAGNET, DESIGNED AND BUILT BY THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION'S (ERDA) ARGONNE NATIONAL LABORATORY NEAR CHICAGO, WILL BE USED TO TEST THE EXPERIMENTAL MAGNETOHYDRODYNAMIC (MHD) PROCESS FOR GENERATING ELECTRICITY. MHD GENERATORS PRODUCE ELECTRICITY DIRECTLY

FROM THE BURNING OF FOSSIL FUELS AT POTENTIAL EFFICIENCIES MORE THAN ONE-AND-A-HALF TIMES THOSE OF TODAY'S CONVENTIONAL POWER PLANTS.

THE US MAGNET WILL BE INSTALLED IN A SPECIALLY-CONSTRUCTED BYPASS LOOP IN THE SOVIET'S U-25 MHD FACILITY OUTSIDE MOSCOW. THE U-25 POWER PLANT, OPERATED BY THE USSR INSTITUTE FOR HIGH TEMPERATURES, IS THE LARGEST EXISTING MHD TEST FACILITY IN THE WORLD.

WITH ITS SPECIAL TRANSPORTER, THE CYLINDRICAL MAGNET WEIGHS MORE THAN 60 TONS. IT WILL BE ONE OF THE HEAVIEST LOADS EVER TRANSPORTED BY AIR.

DESPITE ITS RELATIVELY COMPACT SIZE, 14 FEET (4.4 METERS) LONG BY 6.5 FEET (2 METERS) IN DIAMETER, THE MAGNET WILL GENERATE A MAGNETIC FIELD OF 50,000 GAUSS, MORE THAN 250,000 TIMES THAT OF THE EARTH. IT IS THE LARGEST AND MOST POWERFUL MAGNET OF ITS TYPE EVER BUILT.

WHEN INSTALLED, THE MAGNET WILL BE COOLED TO A TEMPERATURE LIMITED OFFICIAL USE

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PAGE 03 STATE 133783

OF 453 DEGREES F (277 DEGREES C) BELOW ZERO. AT THIS TEMPERATURE, IT BECOMES "SUPERCONDUCTING", MEANING THAT IT LOSES MOST OF ITS RESISTANCE TO ELECTRICITY AND OPERATES WITH MINIMAL POWER CONSUMPTION.

"THE SOVIETS HAVE NEVER USED A SUPERCONDUCTING MAGNET IN THEIR U-25 PILOT PLANT," SAID DR. WILLIAM D. JACKSON, HEAD OF THE US MHD PROGRAM AT ERDA. "THEIR EMPHASIS HAS BEEN ON CONSTRUCTING COMPLETE MHD PLANTS OF INCREASING SIZE AND COMPLEXITY, WHILE USING RELATIVELY CONVENTIONAL HARDWARE. ON THE OTHER HAND, THE US PROGRAM HAS FOCUSED ON DEVELOPING AND REFINING INDIVIDUAL COMPONENTS FOR THE MHD SYSTEM."

"IT'S MUCH LIKE THE SOVIETS SUPPLYING THE CHASSIS AND BODY OF A CAR AND THE UNITED STATES SUPPLYING A NEW TYPE OF ENGINE."

"BETWEEN US," DR. JACKSON SAID, "WE HOPE TO DEVELOP A WORK-ABLE MHD SYSTEM THAT WILL PROVE USEFUL TO BOTH NATIONS AS

WELL AS THE REST OF THE WORLD. THE IMPROVED EFFICIENCY OF MHD SYSTEMS COULD RESULT IN SUBSTANTIAL SAVINGS OF FUEL USED TO GENERATE ELECTRICITY AND INCREASE THE USE OF OUR VAST RESERVES OF COAL."

UNLIKE A CONVENTIONAL STEAM-TURBINE GENERATOR, AN MHD GENERATOR USES NO MOVING PARTS TO PRODUCE ELECTRICITY. INSTEAD A STREAM OF VERY HOT CONDUCTIVE GAS, TYPICALLY

4500 DEGREES F (2480 C), IS FORCED AT VELOCITIES CLOSE TO THE SPEED OF SOUND THROUGH A DUCT SITUATED IN A HIGH POWER MAGNET. THE MOVING GAS ESSENTIALLY REPLACES THE ROTATING ARMATURE OF A CONVENTIONAL GENERATOR. ELECTRICITY, PRODUCED BY THE GAS MOVING THROUGH THE MAGNETIC FIELD, IS WITHDRAWN BY ELECTRODES IMBEDDED IN THE DUCT'S WALLS.

MHD GENERATORS COULD BE AS MUCH AS 60 PERCENT EFFICIENT, LIMITED OFFICIAL USE

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PAGE 04 STATE 133783

COMPARED TO THE 35-40 PERCENT EFFICIENCIES OF TODAY'S CONVENTIONAL FOSSIL FUEL PLANTS.

DR. JACKSON EMPHASIZED THAT USING THE SOVIET PILOT PLANT WILL SPEED COMMERCIALIZATION OF THE MHD PROCESS IN THE US AT REDUCED COST TO THE AMERICAN PUBLIC.

"USE OF THE SUPERCONDUCTING MAGNET IN THE SOVIET FACILITY TO CARRY OUT JOINT EXPERIMENTS IN MHD GENERATION WILL PREVENT COSTLY DUPLICATION OF TEST EQUIPMENT. THIS WILL SAVE TAXPAYERS MANY MILLIONS OF DOLLARS AND PERMIT THE US TO MOVE MORE RAPIDLY TOWARD BUILDING LARGE-SCALE MHD POWER GENERATING FACILITIES," SAID DR. JACKSON.

DR. ROBERT G. SACHS, DIRECTOR OF ARGONNE, NOTED THAT THE LABORATORY HAS PLAYED A PIONEERING ROLE IN THE DEVELOPMENT OF LARGE SUPERCONDUCTING MAGNETS. THE TWO LARGEST SUPERMAGNETS IN THE WORLD, A 110-TON MAGNET AT ARGONNE'S HIGH ENERGY PHYSICS FACILITY AND A 150-TON MAGNET AT THE NEARBY FERMI NATIONAL ACCELERATOR LABORATORY, WERE DESIGNED AND BUILT BY ARGONNE.

"WE ARE PARTICULARLY PLEASED THAT WE WERE SELECTED BY ERDA TO BUILD THIS NEW MAGNET WHICH COULD PLAY AN IMPORTANT ROLE IN HELPING MOVE TOWARD THE SOLUTION OF THE WORLD'S ENERGY PROBLEM," HE SAID.

DR. MICHAEL PETRICK, MHD PROGRAM DIRECTOR AT ARGONNE, EXPLAINED THAT SUPERCONDUCTING MAGNETS ARE REQUIRED FOR COMMERCIAL MHD POWER GENERATION BECAUSE OF THEIR HIGH MAGNETIC FIELDS AND MINIMAL POWER CONSUMPTION.

"A PORTION OF THE ELECTRICITY GENERATED BY THE PROCESS MUST BE FED BACK INTO THE SYSTEM TO POWER THE MAGNET. BY MINIMIZING THE AMOUNT OF ELECTRICITY USED BY THE MAGNET, WE HOPE TO MAKE THE SYSTEM MORE ECONOMICALLY ATTRACTIVE," LIMITED OFFICIAL USE

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PAGE 05 STATE 133783

DR.PETRICK SAID.

AIR TRANSPORT OF THE MAGNET WAS CHOSEN TO MINIMIZE THE CHANCE OF DAMAGE DURING A LONG SEA VOYAGE. THE 247-FOOT

(75-METER) LONG, 6-STORY HIGH C-5 GALAXY IS THE ONLY AIR-CRAFT IN THE WORLD CAPABLE OF TRANSPORTING SUCH A LOAD NONSTOP TO MOSCOW.

THE MAGNET WILL BE USED IN A VARIETY OF TESTS TO BE CONDUCTED JOINTLY BY THE TWO NATIONS FOR AT LEAST TWO YEARS. COOPERATION WITH THE USSR WAS IMPLEMENTED IN JULY 1973 AND IS CURRENTLY AN ACTIVITY UNDER THE US-USSR ENERGY AGREEMENT OF 1974.

"WE HAVE RECEIVED EXCELLENT COOPERATION FROM THE INSTITUTE FOR HIGH TEMPERATURES OF THE USSR ACADEMY OF SCIENCES, IN ADDITION TO THE US STATE DEPARTMENT AND THE AIR FORCE IN MAKING THIS IMPORTANT SCIENTIFIC PROJECT POSSIBLE."

"WE LOOK FORWARD TO A MUTUALLY PROFITABLE TESTING PROGRAM WITH THE SOVIETS," SAID DR. JACKSON. END TEXT.

FYI -- THIS JUNE 13 PRESS RELEASE DIFFERS FROM THAT FOUND IN PRESS KITS ALREADY POUCHED. REQUEST EMBASSY COPY ABOVE VERSION OF RELEASE AND SUBSTITUTE IT FOR THE RELEASE IN KIT LABELED "FOR IMMEDIATE RELEASE SATURDAY JUNE 18." KITS MAY THEN BE RELEASED TO PRESS IN MOSCOW ON MONDAY, JUNE 13. WITH THIS REVISION, THEY ARE NO LONGER EMBARGOED FOR THE SATURDAY JUNE 18 PRESS CONFERENCE AS REPORTED IN STATE 130410. END FYI VANCE

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